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## MEMORANDUM

DATE                    23 December 1998  
TO:                    David Bennett, WAM, U.S. EPA, Region X  
FROM                    Michelle Turner, Chemist, WESTON, Seattle  
                        *PDM* Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle  
SUBJECT:              Validation of Polychlorinated Biphenyls (Congeners) Data  
                        Laboratory Batch: K9806404  
                        Site Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO : 4000-019-038-AAAK

cc                      Bruce Woods, RAP-WAM, U.S. EPA, Region X  
                        Dena Hughes, Site Manager, WESTON, Seattle (memo only)  
                        Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of sixteen sediment samples, laboratory batch K9806404, collected from the Duwamish River has been completed. Samples were analyzed for polychlorinated biphenyls as individual congeners using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington. The samples were numbered:

98384010	98384011	98384012	98384013	98384014
98384015	98384016	98384017	98384018	98384019
98384020	98384021	98384022	98384023	98384024
98384025				

### Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review

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QA Review Batch K9806404 (PCB Congeners)

Site: Duwamish River

Page 2

follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240 1-05, February 1994)

1 Timeliness

All samples were extracted 42 days after sample collection, exceeding the 14 day holding time criteria in the Sampling and Analysis Plan. However, prior to extraction, samples were stored frozen, thus extending the holding time. Samples were extracted within the 12 month holding time recommended by PSEP for frozen samples.

2 Initial Calibration

A six point initial calibration was performed using tetrachloro-meta-xylene (TCMX) as an internal standard. Relative response factors (RRF) were calculated for each target congener. The RRF percent relative standard deviation (%RSD) was less than 20 percent for all analytes, otherwise, regression was used for quantitation

3 Calibration Verification

Calibration verification standards were analyzed every 12 hours using a midrange standard. The RRF percent difference was less than 25 percent of the initial calibration value

4. Retention Time Windows

Relative Retention Time Windows were calculated from initial calibration. Retention times for calibration verification standards were within established windows of  $\pm 0.06$  RRT

5. Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions:

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QA Review Batch K9806404 (PCB Congeners)

Site. Duwamish River

Page 3

Sample	Compound	QL Goal (µg/Kg)	Reported QL (µg/Kg)
98384020	PCB77	1	4
98384020	PCB123	1	45
98384020	PCB114	1	16
98384020	PCB126	1	4

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference

6 Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met

No target analytes were reported in laboratory method blanks

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recoveries met quality control criteria for all samples.

8. Matrix Spike and Matrix Spike Duplicate

Matrix spike (MS) or matrix spike duplicate (MSD) percent recovery for the following compounds were outside QC guidelines:

Sample	Compound	Percent Recovery	QC Limits
98384023MS	PCB18	42	60-140
98384023MS	PCB28	44	60-140
98384023MS	PCB52	45	60-140

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## QA Review Batch K9806404 (PCB Congeners)

Site Duwamish River

Page 4

Sample	Compound	Percent Recovery	QC Limits
98384023MS	PCB44	44	60-140
98384023MS	PCB66	47	60-140
98384023MS	PCB101	52	60-140
98384023MS	PCB81	47	60-140
98384023MS	PCB77	45	60-140
98384023MS	PCB123	48	60-140
98384023MS	PCB118	48	60-140
98384023MS	PCB114	47	60-140
98384023MS	PCB153	53	60-140
98384023MS	PCB105	44	60-140
98384023MS	PCB138	48	60-140
98384023MS	PCB126	48	60-140
98384023MS	PCB187	50	60-140
98384023MS	PCB128	42	60-140
98384023MS	PCB167	52	60-140
98384023MS	PCB156	47	60-140
98384023MS	PCB157	48	60-140
98384023MS	PCB180	50	60-140
98384023MS	PCB169	52	60-140
98384023MS	PCB170	48	60-140
98384023MS	PCB189	50	60-140
98384023MS	PCB195	52	60-140
98384023MS	PCB206	53	60-140
98384023MS	PCB209	53	60-140
98384023DMS	PCB18	56	60-140
98384023DMS	PCB28	53	60-140
98384023DMS	PCB52	58	60-140

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QA Review Batch K9806404 (PCB Congeners)

Site Duwamish River

Page 5

Sample	Compound	Percent Recovery	QC Limits
98384023DMS	PCB44	59	60-140
98384023DMS	PCB66	59	60-140
98384023DMS	PCB77	58	60-140
98384023DMS	PCB114	59	60-140
98384023DMS	PCB156	58	60-140

Relative percent differences (RPD) between the MS and MSD percent recoveries met QC guidelines for all compounds

No action was taken based solely on MS/MSD data.

9 Laboratory Control Sample (LCS) Analysis

LCS percent recoveries were outside the QC limits for the following compounds:

Sample	Compound	Percent Recovery	QC Limits
K981027-LCS	PCB18	54	70-130
K981027-LCS	PCB28	55	70-130
K981027-LCS	PCB52	60	70-130
K981027-LCS	PCB44	58	70-130
K981027-LCS	PCB66	60	70-130
K981027-LCS	PCB101	63	70-130
K981027-LCS	PCB81	61	70-130
K981027-LCS	PCB77	61	70-130
K981027-LCS	PCB123	63	70-130
K981027-LCS	PCB118	61	70-130
K981027-LCS	PCB114	60	70-130
K981027-LCS	PCB153	64	70-130
K981027-LCS	PCB105	58	70-130

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QA Review Batch K9806404 (PCB Congeners)

Site Duwamish River

Page 6

Sample	Compound	Percent Recovery	QC Limits
K981027-LCS	PCB138	67	70-130
K981027-LCS	PCB126	63	70-130
K981027-LCS	PCB187	64	70-130
K981027-LCS	PCB128	60	70-130
K981027-LCS	PCB167	64	70-130
K981027-LCS	PCB156	60	70-130
K981027-LCS	PCB157	64	70-130
K981027-LCS	PCB180	64	70-130
K981027-LCS	PCB169	66	70-130
K981027-LCS	PCB170	63	70-130
K981027-LCS	PCB189	61	70-130
K981027-LCS	PCB195	66	70-130
K981027-LCS	PCB206	66	70-130
K981027-LCS	PCB209	66	70-130

Results for compounds listed above were qualified as estimated (J) Undetected compounds were also qualified as estimated (UJ)

10. Field Duplicate Analysis

No field duplicates were associated with this sample delivery group.

11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples

Sample Number	Compound	DB-5 Conc ( $\mu\text{g}/\text{Kg}$ )	DB-1701 Conc ( $\mu\text{g}/\text{Kg}$ )	RPD
98384010	PCB28	1	2	67
98384010	PCB52	2	4	67

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## QA Review Batch K9806404 (PCB Congeners)

Site: Duwamish River

Page 7

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98384010	PCB101	2	4	67
98384010	PCB138	8	4	67
98384014	PCB52	1	2	67
98384014	PCB101	1	2	67
98384014	PCB118	2	1	67
98384014	PCB153	2	.1	67
98384014	PCB138	2	1	67
98384016	PCB52	2	3	40
98384016	PCB66	3	2	40
98384016	PCB138	3	1	100
98384019	PCB18	1	2	67
98384019	PCB28	1	3	100
98384019	PCB44	2	1	67
98384019	PCB66	2	3	40
98384019	PCB138	2	1	67
98384020	PCB66	309	245	23
98384020	PCB101	160	283	56
98384020	PCB77	791	4	198
98384020	PCB123	230	45	135
98384020	PCB114	16	54	109
98384020	PCB138	500	239	71
98384020	PCB126	58	4	174
98384020	PCB195	3	2	40
98384020	PCB206	2	1	67
98384020DIL	PCB18	1	2	67
98384020DIL	PCB128	1	4	120
98384020DIL	PCB101	175	410	80

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QA Review Batch K9806404 (PCB Congeners)

Site. Duwamish River

Page 8

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc. (µg/Kg)	RPD
98384020DIL	PCB77	796	4	198
98384020DIL	PCB123	234	50	130
98384020DIL	PCB114	15	64	124
98384020DIL	PCB105	229	366	46
98384020DIL	PCB126	6	3	67
98384020DIL	PCB206	2	1	67

Differences can arise from analytical interferences on one column. However, the RPDs are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte, unless interferences or coelution prevented use of the lower concentration.

12. Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. A duplicate analysis was performed on sample 98384023, no compounds were detected in the sample or duplicate. The case narrative indicated that several congeners in the LCS, MS and DMS do not meet the project QC limits. Laboratory QC limits for congeners have not yet been developed. No other complications were noted.

13. Laboratory Contact

The laboratory was not contacted.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values.

Data Qualifiers

U - The compound was analyzed for, but was not detected

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

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QA Review Batch K9806404 (PCB Congeners)

Site Duwamish River

Page 9

- J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard
- R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.
- N - Presumptive evidence of presence of material (tentative identification).
- I - Elevated reporting limit due to matrix interference.

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**COLUMBIA ANALYTICAL SERVICES, INC.**

**Analytical Report**

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

**Congener Specific PCBs**

<b>Sample Name</b>	98384010	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9806404-001	<b>Basis.</b>	Dry
<b>Test Notes</b>			

<b>Analyte</b>	<b>Prep Method</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>Dilution Factor</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Result</b>	<b>Result Notes</b>
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/10/98	1	J
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/10/98	2	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/10/98	1	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/10/98	5	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/10/98	4	↓
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/10/98	3	J
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/10/98	5	J
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/10/98	1	J
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/10/98	8	J
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/10/98	3	J
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/10/98	1	J
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/10/98	4	J
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/10/98	3	J
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓

Approved By \_\_\_\_\_

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Date 11/17/98

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**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

**Congener Specific PCBs**

<b>Sample Name</b>	98384011	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9806404-002	<b>Basis.</b>	Dry
<b>Test Notes</b>			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	

Approved By \_\_\_\_\_

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Date

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Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

Congener Specific PCBs

Sample Name	98384012	Units	ug/Kg (ppb)
Lab Code	K9806404-003	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	

Approved By \_\_\_\_\_

Date 11/17/98

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

Congener Specific PCBs

Sample Name	98384013	Units	ug/Kg (ppb)
Lab Code.	K9806404-004	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	

Approved By \_\_\_\_\_

Date 11/17/98

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:**  
**Project:**  
**Sample Matrix:**

Roy F Weston, Inc  
Duwamish River/4000-027-001-2019-38  
Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

**Congener Specific PCBs**

Sample Name	98384014	Units	ug/Kg (ppb)
Lab Code	K9806404-005	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/10/98	1	J
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/10/98	2	J
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/10/98	2	J
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/10/98	1	J
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/10/98	2	J
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/10/98	2	J
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	UJ
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/10/98	ND	↓

Approved By \_\_\_\_\_

Date: 11/17/98

00105

Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

Congener Specific PCBs

Sample Name	98384015	Units	ug/Kg (ppb)
Lab Code	K9806404-006	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WJ
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

*PB*

Date 11/17/98

*MGT 11/16/98*

**00105 A**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

Congener Specific PCBs

<b>Sample Name</b>	98384016	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9806404-007	<b>Basis</b>	Dry
<b>Test Notes</b>			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	↓
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	J
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	↓
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	3	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	WT
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	J
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	J
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	3	J
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	↓
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	↓
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	J
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

*PRO*

Date 11/17/98

*WT 12/6/98*

*00106*

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

Congener Specific PCBs

Sample Name	98384017	Units	ug/Kg (ppb)
Lab Code	K9806404-008	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

Date 11/17/98

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F. Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

Congener Specific PCBs

Sample Name	98384018	Units	ug/Kg (ppb)
Lab Code	K9806404-009	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	J
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	J
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	J
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By Po IS4/021397p

Date 11/17/98

*1997-11-16/98*  
00108

Page No

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

<b>Client:</b>	Roy F Weston, Inc	<b>Service Request:</b>	K9806404
<b>Project:</b>	Duwamish River/4000-027-001-2019-38	<b>Date Collected:</b>	9/15/98
<b>Sample Matrix:</b>	Sediment	<b>Date Received:</b>	9/16/98

**Congener Specific PCBs**

Sample Name	98384019	Units	ug/Kg (ppb)
Lab Code	K9806404-010	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	J
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	1	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	↓
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	J
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	J
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	J
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WS
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

*PoR*

Date 11/17/98

*WSF 12/16/98*

00109

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:**  
**Project:**  
**Sample Matrix:**

Roy F Weston, Inc  
Duwamish River/4000-027-001-2019-38  
Sediment

**Service Request:** K9806404  
**Date Collected:** 9/15/98  
**Date Received:** 9/16/98

**Congener Specific PCBs**

<b>Sample Name</b>	98384020	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9806404-011	<b>Basis</b>	Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	1 J	
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND UJ	
PCB 52	EPA 3550B	8082	10	10	10/27/98	11/12/98	189 J	
PCB 44	EPA 3550B	8082	10	10	10/27/98	11/12/98	95	
PCB 66	EPA 3550B	8082	10	10	10/27/98	11/12/98	343	
PCB 101	EPA 3550B	8082	10	10	10/27/98	11/12/98	410	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND UJ	
PCB 77	EPA 3550B	8082	4	1	10/27/98	11/11/98	ND UJ J B	
PCB 123	EPA 3550B	8082	45	1	10/27/98	11/11/98	ND UJ J B	
PCB 118	EPA 3550B	8082	10	10	10/27/98	11/12/98	411 J	
PCB 114	EPA 3550B	8082	16	1	10/27/98	11/11/98	ND UJ J B	
PCB 153	EPA 3550B	8082	10	10	10/27/98	11/12/98	290 J	
PCB 105	EPA 3550B	8082	10	10	10/27/98	11/12/98	229 J	
PCB 138	EPA 3550B	8082	10	10	10/27/98	11/12/98	461 J	
PCB 126	EPA 3550B	8082	4	1	10/27/98	11/11/98	ND UJ J B	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	20 J	
PCB 128	EPA 3550B	8082	10	10	10/27/98	11/12/98	126 J	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	30	
PCB 156	EPA 3550B	8082	10	10	10/27/98	11/12/98	76	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	63 J	
PCB 180	EPA 3550B	8082	10	10	10/27/98	11/12/98	21	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	63 J	
PCB 170	EPA 3550B	8082	10	10	10/27/98	11/12/98	ND UJ	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	61 J	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	3	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	2	
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Approved By

11/11/98

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/16/98  
**Date Received:** 9/17/98

Congener Specific PCBs

Sample Name	98384021	Units	ug/Kg (ppb)
Lab Code	K9806404-012	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

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Date

*11/17/98*

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**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment      **Service Request:** K9806404  
**Date Collected:** 9/16/98  
**Date Received:** 9/17/98

Congener Specific PCBs

Sample Name	98384022	Units	ug/Kg (ppb)
Lab Code	K9806404-013	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	US
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

Date 11/17/98

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**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/16/98  
**Date Received:** 9/17/98

Congener Specific PCBs

<b>Sample Name</b>	98384023	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9806404-014	<b>Basis</b>	Dry
<b>Test Notes</b>			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

Date 11/17/98

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**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:**  
**Project:**  
**Sample Matrix:**

Roy F. Weston, Inc  
Duwamish River/4000-027-001-2019-38  
Sediment

**Service Request:** K9806404  
**Date Collected:** 9/16/98  
**Date Received:** 9/17/98

**Congener Specific PCBs**

<b>Sample Name</b>	98384024	<b>Units</b>	ug/Kg (ppb)
<b>Lab Code</b>	K9806404-015	<b>Basis</b>	Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	uJ
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/12/98	ND	

Approved By \_\_\_\_\_

Date 11/17/98

**00114**

**COLUMBIA ANALYTICAL SERVICES, INC.**

Analytical Report

**Client:** Roy F Weston, Inc  
**Project:** Duwamish River/4000-027-001-2019-38  
**Sample Matrix:** Sediment

**Service Request:** K9806404  
**Date Collected:** 9/16/98  
**Date Received:** 9/17/98

Congener Specific PCBs

Sample Name	98384025	Units	ug/Kg (ppb)
Lab Code	K9806404-016	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	WT
PCB 28	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 52	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 44	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 66	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 101	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 81	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 77	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 123	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 118	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 114	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 153	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 105	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 138	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 126	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 187	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 128	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 167	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 156	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 157	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 180	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 169	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 170	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 189	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 195	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 206	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	
PCB 209	EPA 3550B	8082	1	1	10/27/98	11/11/98	ND	

Approved By \_\_\_\_\_

*PoP*

Date 11/17/98

*mgf 12/16/98*  
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